

Please add a paragraph after line 15 on page 4, as the following paragraph:

A2 -- FIG. 7B is a side view of the support stubs and the outrigger foot members resting on the support stubs according to the present invention. --

Please add a paragraph after line 2 on page 5, as the following paragraph:

Ans C1) A3 -- FIG. 14 illustrates a plurality of support holes disposed on columns. --

Please replace the paragraph beginning at page 6, line 6, with the following rewritten paragraph:

MC27 A4 -- As shown in FIGS. 2 and 3, one end of each horizontal arm 40 is connected to the respective outrigger 24 and the other end is pivotally (both horizontally and vertically) attached to the lower frame 36. The diagonal braces 41 welded at their midpoints are attached to the corners of the lower frame 36 for strength. The various pivots are used to absorb the lateral load of the lifting device 14 when in operation. As shown in FIG. 3, the outriggers 24 are also attached to a rectangular outer frame 42 whose diameter is larger than that of the upper frame 30. To allow workers to walk on the basket 18 when performing a climbing (jumping) operation, a platform (not shown) between the inner frame 36 and the outer frame 42 can be provided over the horizontal arms 40. Guard rails (not shown) on the outer frame 42 can also be provided. --

Please replace the paragraph beginning at page 6, line 15, with the following rewritten paragraph:

-- FIG. 4 is a side view of the upper basket 16. The basket 16 includes a rectangular upper frame 44, a rectangular center frame 46, a rectangular lower frame 48 and vertical beams 50 which surround the tower 10 and are attached to each other by the rectangular upper frame 44, the rectangular center frame 46 and the rectangular lower frame 48. Braces 52 attached to the vertical beams 50 and the lower frame 48 provide rigidity to the upper basket 16. —

Please replace the paragraph beginning at page 7, line 5, with the following rewritten paragraph:

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-- One end of each horizontal arm 58 is connected to the respective outrigger 24 and the other end is pivotally (both horizontally and vertically) attached to the lower frame 48. The outriggers 24 are attached to an outer frame (not shown) similar to 42 as shown in FIG. 3. To allow workers to walk on the basket 16 when performing a jumping operation, a platform and guard rails (not shown) can also be provided. —

Please replace the paragraph beginning at page 8, line 5, with the following rewritten paragraph:

A7
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-- A locking device such as a pair of dogs 70 (only one shown) are opposedly attached to the climbing frame 60 as shown in FIG. 5A and 5B. The dog 70 is rotatable with respect to its housing 72. The dog 70 is shown in a locked position resting on a stop plate 78 with a locking pin 76 inserted through pin 51, as shown in FIG. 5A, to lock the dog 70 to its housing 72. To move the dog 70 to an unlocked position, the pin 76 and the pin 51 are removed and the dog 70 is tilted back using a handle 74 until the dog rests on a stop plate 80. A second pair of dogs 80 (only one shown) are attached to the opposite sides of the lower frame 48. The two pairs of dogs 70, 80 are used to assist in the climbing operation as will be explained later herein. —

Please replace the paragraph beginning at page 8, line 13, with the following rewritten paragraph:

A₈ -- When the tower 10 is not being raised, the foot members 25 of the outriggers 24 are extended and are resting on the support stubs 28. Referring to FIGS. 6 and 7, the stub 28 is either shop welded or bolted to the respective vertical column 22. The stub 28 as shown has two stub members 82 disposed at right angle to each other. The two stub members 82 are respectively attached to the web and flange of the vertical column 22. Each stub member 82 includes a back plate 87 attached to the column 26, a web 84, and top and bottom flanges 86. --

Please replace the paragraph beginning at page 8, line 19, with the following rewritten paragraph:

A₉ -- To further secure the tower crane 12 to the lower basket 18, the foot members 25 are clamped using a clamp such as a yoke 88 as shown in FIGS. 1, 8, 9 and 10. The yoke 88 includes a main plate 90 having a through hole 92 and recesses 94 on both ends for receiving left and right plates 96. Each plate 96 has an angled rod or rib 98 welded to the top of the plate at a 45 degree angle. --

Please replace the paragraph beginning at page 9, line 3, with the following rewritten paragraph:

A₁₀ -- To clamp the foot member 25, a threaded bar 71 having a head on one end is inserted into an opening 100 from the top, as shown in Fig. 7b, and the through hole 92 of the main plate 90 disposed underneath the foot member 25. The left and right plates 96 are adjusted by sliding them into or out of the main plate 90 until the angled rods 98 are underneath the top flanges 86 of

W/S Not
adjusted

A₁₀ the two stub member 82. Then a nut is threaded and secures the foot member 25 to the stub members 82. --

Please replace the paragraph beginning at page 9, line 8, with the following rewritten paragraph:

A₁₁ -- It is to be noted also that the clamps 88 are generally not necessary because the lower and upper baskets 16, 18 with their outriggers 24 provide sufficient lateral support to prevent any uplift of the lifting device 12 during operation of the crane 12. The clamps 88 are provided to secure the crane 12 only under unexpectedly extreme conditions and to sometimes satisfy certain safety regulations. In fact, the lower basket 18 provides most of the lateral support that not even the upper basket 16 may be needed for proper operation. This principle is similar to that of a free-standing crane on a truck where the truck has extended outriggers resting on the ground. Just as the extended outriggers provide lateral support for the free standing crane, the lower basket 18 with its extended outriggers 24 provide sufficient lateral support to prevent the crane 12 from tipping over. --

Please replace the paragraph beginning at page 9, line 18, with the following rewritten paragraph:

A₁₂ -- As discussed above, the weight of the lifting device 14, tower 10 and crane 12 are principally distributed on the vertical columns 22. The turning moment or the lateral load of the crane 12 is also principally transferred through the sloped arms 34, 38, 54, 56 to the vertical columns 22. As can be appreciated by persons of ordinary skill in the art, these features provide several important advantages. Because the lateral and vertical loads are distributed on the vertical columns 22, there is no need to reinforce the horizontal beams or the floors to

Fig accommodate the crane 12. Because the entire tower 10 moves up as the floors are added, no tower sections need to be added. Nor is there a need for a reinforced foundation and tie rods to prevent the tower crane 12 from tipping prior to the time the crane 12 is first jumped. Further, no chucking is needed to brace the tower 10 against the horizontal slabs or beams since the lateral load is transferred as principally a vertical force to the columns. As can be appreciated, the lifting device 14 of the present invention provides substantial cost savings over the prior art tower cranes. For a typical 45 story steel building the savings in steel cost and labor alone are estimated to be in the half a million to one million dollar range. --

Please replace the paragraph beginning at page 10, line 10, with the following rewritten paragraph:

Num
A13 -- The principles of the present invention can be employed in concrete buildings as well, as shown in Fig. 14. Instead of support stubs 28, openings 1405 on the cement columns 1410 or vertical bearing walls, preferably at each corner, are made as the floors are raised and the foot members 25 are inserted into the openings 1405 rather than extended over the stubs 28 so that the crane load and the lateral load is principally taken by the columns 1410. --

Please replace the paragraph beginning at page 10, line 15, with the following rewritten paragraph:

A14 -- A climbing operation of the present invention will now be explained with reference to FIGS. 1, 4 and 13. The climbing operation is done in two steps. First, using the climbing frame 60, the upper basket 16 is raised around the tower 10 and seated upon the support stubs 28 at the

A 14
desired level. Then using the upper basket 16 as the support, the lower basket 18, along with the tower 10, is raised to its desired level. --

Please replace the paragraph beginning at page 10, line 20, with the following rewritten paragraph:

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-- The climbing operation is shown in more detail in FIGS. 13A to 13E. FIG. 13A shows the lifting device 14 and tower 10 prior to the climbing operation. At this point, the climbing dogs 70 are in their unlocked position and the basket dogs 80 are in the locked position. Then, the cylinders 68 extend their pistons 69 to raise the lifting frame 60 around the tower 10 as shown in FIG. 13B. When the pistons 69 are appropriately extended, the climbing dogs 70 are rotated into the locked position and are disposed on top of the horizontal brace 62 while the basket dogs 80 are rotated into the unlocked position if they are locked. With the climbing dogs 70 in the locked position and the basket dogs 80 in the unlocked position, the outriggers 24 retract their foot members away from the stubs 28 to prepare the upper basket 16 for climbing. The cylinders 68 then retract the pistons 69 thus raising the upper basket 16 toward the climbing frame 60 as shown in FIG. 13C. In an alternative embodiment, the outriggers 24 can retract their foot members at the same time the upper basket 16 is raised. When the pistons 69 are appropriately retracted, the basket dogs 80 are rotated into the locked position and are disposed on top of the horizontal brace 62. The pistons 69 are then slightly extended until the basket dogs 80 take the load of the upper basket 16. --
